

0043075

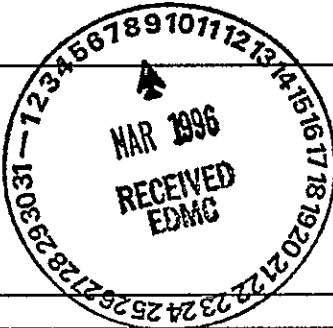
Sta. 4 (8)

FEB 29 1996

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT NO 614779

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Data Assessment and Interpretation	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Tank 241-BX-112/Waste Management/DA&I/Characterization Technical Basis	6. Cog. Engr.: John. M. Conner	7. Purchase Order No.: N/A
8. Originator Remarks: This document is being released into the supporting document system for retrievability purposes.		9. Equip./Component No.: N/A
11. Receiver Remarks: For release.		10. System/Bldg./Facility: N/A
		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 02/13/96

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-WM-DP-170	N/A	0	45-Day Safety Screening Results for Tank 241-BX-112, Push Mode Cores 118 and 119	Q	2	1	1

16. KEY			
Approval Designator (F)	Reason for Transmittal (G)		Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
2	1	Cog.Eng. J. M. Conner	<i>J.M. Conner</i>	2-26-96							
2	1	Cog. Mgr. J.G. Kristofzski	<i>J.G. Kristofzski</i>	3-1-96							
2	1	AESA E.W. Miller	<i>E.W. Miller</i>	2/26/96							
2	1	QA 2-29-96	<i>2-29-96</i>								
2	1	K. L. Silvers	<i>K.L. Silvers</i>	2/28/96							
2	1	Production Planning & Control A.D. Rice	<i>A.D. Rice</i>	2-28-96							
4	4	L.M. Sasaki	<i>L.M. Sasaki</i>	2/28/96							

18. <i>L.R. Miller</i> Signature of EDT Originator Date 2/26/96	19. N/A Authorized Representative Date for Receiving Organization	20. <i>J.G. Kristofzski</i> Cognizant Manager Date 3-1-96	21. DOE APPROVAL (if required) Ctrl. No. <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/comments <input type="checkbox"/> Disapproved w/comments
---	--	--	---

"45-DAY SAFETY SCREENING RESULTS FOR TANK 241-BX-112, PUSH MODE CORES 118 AND 119."

John M. Conner
Westinghouse Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: EDT-614779 UC: 2070
Org Code: 75310 Charge Code: MD378
B&R Code: EW 3120074 Total Pages: 16

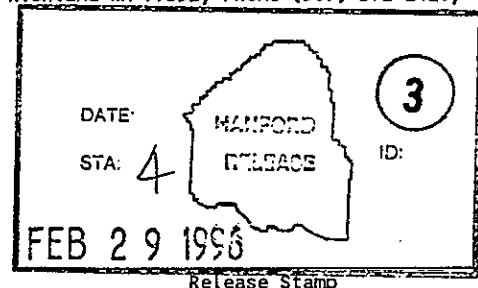
Key Words: 45-Day Safety Screening Results, Tank 241-BX-112 Safety
Screening Results, Cores 118 and 119

Abstract: N/A

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

 2/29/96
Release Approval Date



Approved for Public Release



Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-170, REV. 0

ANALYTICAL SERVICES

**45-DAY SAFETY SCREENING RESULTS FOR
TANK 241-BX-112, PUSH MODE
CORES 118 AND 119**

Project Coordinator: **JOHN M. CONNER**
KURT L. SILVERS (PNL)

Prepared for the U.S. Department of Energy
Office of Environmental Restoration
and Waste Management

by

Westinghouse Hanford Company
Box 1970
Richland, Washington

WHC-SD-WM-DP-170, REV. 0

NARRATIVE

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-BX-112,
PUSH MODE CORES 118 AND 119

ANALYTICAL SUMMARY

Two push mode core samples, 118 and 119, were taken from tank 241-BX-112 (BX-112). The samples were received at the 325 Laboratory and underwent safety screening analyses consisting of bulk density, differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and determination of total alpha activity. The results were compared to the safety screening limits at a confidence level of 95%. None of the adjusted results exceeded the limits stated in the Sampling and Analysis Plan (SAP) [1].

Analyses are also being performed for IC and ICP. Preliminary results are presented for information use only. Final results will be included in a revision to this report.

The flammability of the tank vapor space was determined to be below levels of concern (0% of the Lower Explosive Limit) during auger sampling earlier in 1995 [2]. The analytical data presented in this report on the core samples and the earlier data on the auger samples and tank dome space flammability [2] indicate that the tank may be considered "safe" per the criteria in the *Tank Safety Screening Data Quality Objective* [3].

SCOPE

This document serves as the 45-day report deliverable for the tank BX-112 push mode core samples collected on December 21, 22, and 27, 1995 [core 118 (core samples 95-0288A through 95-0290) and core 119 (core samples 95-0292 through 95-0294)]. The 325 Laboratory received, extruded, and analyzed each sample in accordance with the SAP [1]. Included in this report are the primary safety screening results obtained from the analyses.

None of the safety screening notification limits were exceeded; therefore, no additional testing to support safety screening analyses is required. Additional analyses conducted by the 325 Laboratory on these push mode core samples will be included in a revision to this report. The BX-112 samples are being further analyzed for certain chemical constituents in accordance with the SAP.

A hydrostatic head fluid (HHF) blank was not provided to the laboratory as requested by the SAP. LiBr is added to the HHF as a tracer so that any HHF contamination of the core samples can be detected. Results of HHF blank analyses from tanks sampled during the same time frame as BX-112 (e.g., tanks 241-B-204 and 241-U-109) will be included in a revision to this report. These results should provide a reasonable estimate of the LiBr concentration in the HHF used during core sampling of tank BX-112.

A sample identification matrix is provided below in Table 1. This table provides the sample identification, description, and corresponding PNNL sample numbers.

Table 1. Tank BX-112 PNNL ACL Number Assignment

Sample Identification	Sample Description	PNNL ACL-Number
Core 118 Subsegment 1AA	Lower Half of Segment 1A	96-02605
Core 118 Subsegment 1AB	Upper Half of Segment 1A	96-02606
Core 118 Subsegment 2A	Lower Half of Segment 2	96-02607
Core 118 Subsegment 2B	Upper Half of Segment 2	96-02608
Core 118 Subsegment 3A	Segment 3 (no 1/2 segs)	96-02609
Core 119 Subsegment 1A	Lower Half of Segment 1	96-02611
Core 119 Subsegment 1B	Upper Half of Segment 1	96-02612
Core 119 Subsegment 2A	Lower Half of Segment 2	96-02613
Core 119 Subsegment 2B	Upper Half of Segment 2	96-02614
Core 119 Subsegment 3A	Lower Half of Segment 3	96-02615
Core 119 Subsegment 3B	Top of Segment 3	96-02616
Field Blank	--	96-02619
Liner Liquid	Composite of Core 118 Liner Liquids	96-02620
Core 118 Segment 1A Drainable Liquid	--	96-02848
Core 118 Segment 3 Drainable Liquid	--	96-02850

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING

Sample extrusions described below were performed following either WHC procedure LO-160-103 or PNNL procedure 325-A-33P.

Core 118, Segment 1, Sample 95-288

Push mode sample 95-288 was collected from riser 2 of tank BX-112 on November 30, 1995 and extruded at the 222-S 11A hot cell on December 19, 1995. No drainable liquid was present. The lower 9 inches appeared as a damp, smooth, yellow-green sludge which retained its shape on the extrusion tray. This material (203.7 g) was subsampled as the lower half-segment solids. The upper 7 inches (164.6 g) were segregated as upper half-segment solids. This material was a wet, medium brown sludge which tended to "melt" or sag on the extrusion tray.

Due to equipment problems in the field, the drill string was pulled after this segment was sampled and re-inserted at a later date. The core sample continued with segment 1A, 2 and 3. These segments, along with Core 119, were shipped directly to the 325 Laboratory for extrusion and analysis.

Subsamples of each half-segment from Core 118, Segment 1 were shipped from 222-S to the 325 laboratory for analysis. The results will be included in a revision to this report.

Core 118 Segment 1A, Sample 95-0288A

After reinsertion of the drill string, push mode sample 95-288A was collected from riser 2 of tank BX-112 on December 21, 1995 and extruded on January 18, 1996. The first 4 inches contained no solids. No crust was observed. Inches 4 to 6 were a light brown sludge that would not hold its shape in the pan. Inches 8 to 12 were a medium brown sludge that would not hold its shape in the pan. Subsampling revealed a light brown material on the interior with dark brown smearing on the surface. A total of 329.1 g of solid material was collected, with 69.9 g collected from the first 8 inches (lower half) and 224.2 g collected from the upper half-segment solids. A total of 28 mL of drainable liquid was collected. The segment material was divided into half-segments, homogenized and subsampled for further laboratory analyses and archiving.

Core 118 Segment 2, Sample 95-0289

Push mode sample 95-289 was collected from riser 2 of tank BX-112 on December 21, 1995 and extruded on January 19, 1996. A total of 19 inches of material was extruded from the sampler. The material was dark gray/brown in color and lost its shape in the pan. The first 9.5 inches contained a thick "liquid" that would not drain. The upper 9.5 inches contained less of this "liquid." A total of 380.6 g of solid material was collected, with 104.5 g collected from the first 9.5 inches and 211.8 g collected from the upper 9.5 inches. No drainable liquid was present. The segment material was divided into half-segments, homogenized and subsampled for further laboratory analyses and archiving.

Core 118 Segment 3, Sample 95-0290

Push mode sample 95-290 was collected from riser 2 of tank BX-112 on December 22, 1995 and extruded on January 19, 1996. The material poured from the sampler during extrusion. The material was medium brown in color. Two brown clay-like chunks (< 0.5 inches in diameter) were observed at approximately 6 inches. A total of 242.2 g of solid material was collected in the extrusion pan. A total of 45.3 mL of drainable liquid was collected. Due to the relatively low recovery, the sample was not divided into half-segments (per JM Conner, WHC). The sample was homogenized and subsampled for further laboratory analyses and archiving.

Core 119 Field Blank

In accordance with the SAP, a field blank was provided along with Core 119. The field blank was generated on December 27, 1995 and extruded on January 19, 1995. The field blank was a clear, colorless liquid. Subsamples were taken for analysis and archiving.

Core 119 Segment 1, Sample 95-0292

Push mode sample 95-292 was collected from riser 3 of tank BX-112 on December 27, 1995 and extruded on January 20, 1996. A total of 19 inches of material was extruded from the sampler. No crust was observed. The first 12 inches were a light brown sludge that held its shape in the pan. Inches 12 to 19 were a medium brown sludge that held its shape in the pan. A total of 387.4 g of solid material was collected, with 164.9 g collected from the first 9.5 inches and 197.4 g collected from the upper 9.5 inches. No drainable liquid was present. The segment material was divided into half-segments, homogenized and subsampled for further laboratory analyses and archiving.

Core 119 Segment 2, Sample 95-0293

Push mode sample 95-293 was collected from riser 3 of tank BX-112 on December 27, 1995 and extruded on January 22, 1996. A total of approximately 17 inches of material was extruded from the sampler. The material was a light brown sludge with a smooth texture that held its shape in the pan. A total of 393.7 g of solid material was collected, with 131.2 g collected from the first 9.5 inches and 232.5 g collected from the upper 9.5 inches. No drainable liquid was present. The segment material was divided into half-segments, homogenized and subsampled for further laboratory analyses and archiving.

Core 119 Segment 3, Sample 95-0294

Push mode sample 95-294 was collected from riser 3 of tank BX-112 on December 27, 1995 and extruded on January 22, 1996. A total of approximately 17 inches of material was extruded from the sampler. The first extrusion stroke contained approximately 2 inches of solids. The material was a light brown sludge with a smooth texture that held its shape in the pan. A total of 327.6 g of solid material was collected, with 122.4 g collected from the first 9.5 inches and 164.9 g collected from the upper 9.5 inches. No drainable liquid was present. The segment material was divided into half-segments, homogenized and subsampled for further laboratory analyses and archiving.

ANALYTICAL RESULTS

DENSITY

The density of the lower half-segment solids (plus whole-segment 3A of Core 118), drainable liquids, and field blank were measured in duplicate. The density was measured according to technical procedure PNL-ALO-501. The volume of the drainable liquids and field blank were measured in a graduated cylinder with a calibrated balance. The volume of the solids subsamples were measured in graduated centrifuge cones after the samples were centrifuged for 30

minutes. All sample masses were measured with a calibrated electronic balance. The density of these samples was calculated by dividing the mass of the sample by its volume.

The density data for the samples and duplicates is reported in Table 2. The average density for each sample, the variance between samples, and the relative percent differences (RPDs) are also reported for each sample. None of the measurements exceeded the required precision (20% as measured by RPD).

The density of the field blank is consistent with the density of water. The drainable liquid densities are higher than water indicating that the drainable liquids contain a significant quantity of dissolved salts. This is consistent with the weight percent water data presented in the thermal analysis section. The density of the solids subsamples is fairly consistent, ranging from 1.24 to 1.34 g/mL. These densities are consistent with the fluid nature of these samples.

Table 2. Density Results from Tank BX-112

Sample #	Core	Segment	Density (g/mL)	Average	RPD (%)
96-02605	118	1AA (Lower Half) 1AA Dup	1.24 1.28	1.26	3.52
96-02607	118	2A (Lower Half) 2A Dup	1.31 1.30	1.31	0.69
96-02609	118	3A (Whole Seg) 3A Dup	1.27 1.34	1.31	5.15
96-02611	119	1A (Lower Half) 1A Dup	1.34 1.34	1.34	0.35
96-02613	119	2A (Lower Half) 2A Dup	1.25 1.33	1.29	5.81
96-02615	119	3A (Lower Half) 3A Dup	1.28 1.28	1.28	0.20
96-02848	118	1 Drainable Liq 1 Drainable Liq Dup	1.16 1.16	1.16	0.34
96-02850	119	3 Drainable Liq 3 Drainable Liq Dup	1.19 1.22	1.20	2.83
96-02619		Field Blank Field Blank Dup	0.97 1.03	1.00	6.41

THERMOGRAVIMETRIC ANALYSIS (TGA)

Percent water determinations by TGA were made on homogenized subsamples from Core 118 Segments 1A, 2, and 3 and Core 119 Segments 1, 2, and 3. Samples were run on a SEIKO 5200¹ instrument per procedure PNL-ALO-508. Balance calibration of the instrument was checked against a known 20 mg standard laboratory weight. The instrument temperature was calibrated using indium and lead standards; instrument temperature was checked using the indium standard. Temperature readings for the instrument were within 2 °C of the reported literature value. Balance calibration of the TGA was within 0.01 mg of its expected value. The temperature range for the TGA runs was from ambient (~20 °C) to 550 °C, using a scan rate of 10 °C per minute to permit good thermal conductivity in the sample. Analyses were conducted using platinum sample pans under a nitrogen cover gas. Data for percent water are provided in Table 3.

Results ranged from 58.6 to 67.8 percent moisture for solids and 63.3 to 74.3% for drainable liquids. All sample/duplicate results fell well within the established 20% RPD precision limit. Confidence intervals listed in Table 3 correspond to the 95% lower limit values for percent water in the samples. No action limit for moisture is given in the safety screening DQO [3].

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Energetics of Core 118 and Core 119 samples were determined by DSC. DSC analyses were conducted using a SEIKO 5200¹ instrument per procedure PNL-ALO-508. Temperature and enthalpy calibrations of the DSC instrument were made using indium and lead standards. Calibration was checked periodically using an indium standard. A melting temperature of 155.5 °C was measured for the indium standard. This melting temperature was within ± 2 °C of the reported literature value (156.6 °C).

The temperature range for the DSC runs was from ambient (~20 °C) to 550 °C, using a scan rate of 10 °C per minute to permit good thermal conductivity in the sample. Analyses were conducted using platinum sample pans under a nitrogen cover gas.

Enthalpy data are tabulated in Table 4. Confidence intervals listed in Table 4 represent the maximum potential values for samples exhibiting exothermic behavior (e.g., upper confidence limit), and minimum values for sample exhibiting endothermic behavior (lower confidence limit). Sample behavior is broken down into first transition (typically assumed to be water loss) and second transition results. Note that exotherms are recorded as negative numbers. Thus, in the context of Table 4, the confidence limit would have to exceed -480 J/g to impact the notification limit.

Only one sample, 96-02848 (Core 118 Segment 1 drainable liquid) exhibited exothermic activity, based on initial enthalpy determinations. Mean enthalpy for this sample and its duplicate was -226.3 J/g (dry weight basis) at the

¹Seiko Instrument USA, Inc. 20525 Mahattan Pl., Torrance, CA 90501

upper 95% confidence level. When the 95% confidence levels are calculated, three additional samples show a negative enthalpy. This is merely an artifact of the calculation - these samples did not exhibit exotherms. All of the calculated results are well below the action limit of 480 J/g for an exotherm. As a consequence, no safety screening limit notifications are required for either sample.

For the initial water transition, only two samples, 96-02605 (Core 118 subsegment IAA) and 96-02612 (Core 119 Subsegment 1B) exhibited RPD values in excess of the 20% precision limit, with RPD values of 23.9% and 29.3%, respectively. Seven samples (96-02605, 96-02612, 96-02613, 96-02614, 96-02615, 96-02848, and 96-02850) exceeded the 20% RPD precision criterion for second transition enthalpies. Such results are expected for transitions which exhibit low overall enthalpies. In these samples, small enthalpy differences contribute to the larger calculated RPD values.

TABLE 3. TGA Results for Homogenized Samples from Tank 241-BX-112

Description	Sample#	Wt% H2O	Avg Wt% H2O	RPD	95 % LL
C118,S1AA,LH	96-02605	67.5	67.2	0.89	65.3
Duplicate	96-02605D	66.9			
C118,S1AB,UH	96-02606	66.1	65.8	0.91	63.9
Duplicate	96-02606D	65.5			
C118,S2A,LH	96-02607	63.3	61.95	4.36	53.4
Duplicate	96-02607D	60.6			
C118,S2B,UH	96-02608	67.1	67.45	1.04	65.2
Duplicate	96-02608D	67.8			
C118,S3A	96-02609	63.9	65.2	3.99	57.0
Duplicate	96-02609D	66.5			
C119,S1A,LH	96-02611	66.6	65.15	4.45	56.0
Duplicate	96-02611D	63.7			
C119,S1B,UH	96-02612	63.9	61.25	8.65	44.5
Duplicate	96-02612D	58.6			
C119,S2A,LH	96-02613	65.3	64.7	1.85	60.9
Duplicate	96-02613D	64.1			
C119,S2B,UH	96-02614	61.4	62.45	3.36	55.8
Duplicate	96-02614D	63.5			
C119,S3A,LH	96-02615	64	65.2	3.68	57.6
Duplicate	96-02615D	66.4			
C119,S3B,UH	96-02616	65.2	65.7	1.52	62.5
Duplicate	96-02616D	66.2			
Field Blank	96-02619	97.6	98.2	1.22	94.4
Duplicate	96-02619D	98.8			
C118,S1A,DL	96-02848	63.3	64.35	3.26	57.7
Duplicate	96-02848D	65.4			
C118,S3,DL	96-02850	72.7	73.5	2.18	68.4
Duplicate	96-02850D	74.3			

TABLE 4. DSC Results for Homogenized Samples from Tank 241-BX-112

Description	Sample#	First Transition				Second Transition			
		DeltaH1	AvgH1 J/g	95% C.L	RPD	DeltaH2*	AvgH2 J/g **	95% C.L.	RPD
C118, S1AA, LH	96-0260	898.1	1020	252	23.9	16.9	14.25	-2.5	37.2
Duplicate	96-0260	1141.3				11.6			
C118, S1AB, UH	96-0260	1049.3	1012	776	7.4	16.8	15.45	6.9	17.5
Duplicate	96-0260	974.5				14.1			
C118, S2A, LH	96-0260	855.4	839.9	742	3.7	13.1	11.95	4.7	19.2
Duplicate	96-0260	824.3				10.8			
C118, S2B, UH	96-0260	1043	1059	961	2.9	18.6	17.4	9.8	13.8
Duplicate	96-0260	1074				16.2			
C118, S3A, WS	96-0260	949.2	1011	623	12.1	15.8	15.35	12.5	5.9
Duplicate	96-0260	1071.9				14.9			
C119, S1A, LH	96-0261	1069.3	1022	726	9.2	11.2	10.25	4.3	18.5
Duplicate	96-0261	975.4				9.3			
C119, S1B, UH	96-0261	1110.5	968.6	72	29.3	24.2	31.35	-13.8	45.6
Duplicate	96-0261	826.6				38.5			
C119, S2A, LH	96-0261	1061.4	1101	849	7.3	9.6	11	2.2	25.5
Duplicate	96-0261	1141.3				12.4			
C119, S2B, UH	96-0261	915.2	1001	461	17.1	22.1	19.25	1.3	29.6
Duplicate	96-0261	1086.2				16.4			
C119, S3A, LH	96-0261	1086.5	1051	830	6.7	6.5	8.1	-2.0	39.5
Duplicate	96-0261	1016.3				9.7			
C119, S3B, UH	96-0261	1168.8	1105	700	11.6	12.3	11.2	4.3	19.6
Duplicate	96-0261	1040.6				10.1			
Field Blank	96-0261	1542.7	1549	1510	0.8	n/a	n/a	n/a	n/a
Duplicate	96-0261	1555				n/a			
C118, S1A, DL	*96-028	948	988.9	731	8.3	-130.2	-112	-226.3	32.3
Duplicate	*96-028	1029.8				-94.0			
C118, S3, DL	96-0285	1064.8	1073	1023	1.5	31.6	35.95	8.5	24.2
Duplicate	96-0285	1080.7				40.3			

* Adjustment factor for exothermic dry weight-basis correction, transition (2): 0.3565
 Sample 96-02848 second transition data (columns 7, 8, and 9) represent corrected exothermic values.

** Exothermic values are preceded by a "-".

(1) Represents data and/or calculations for the first DSC transition.

(2) Represents data and/or calculations for the second DSC transition.

LH - lower half, UH - upper half, WS - whole segment, DL - drainable liquid

Confidence levels are lower limits for endotherms and upper limits for exotherms.

TOTAL ALPHA ANALYSES

Radiochemical analyses were performed on fusion preparations of samples from Core 118 Subsegments 1AA, 2A, and 3A; Core 119 Subsegments 1A, 2A, and 3A; acidified drainable liquid samples from Core 118 Segments 1 and 3; and a field blank. All samples were analyzed in duplicate except the field blank and the Core 118 Segment 1A drainable liquid. The duplicates for these samples will be analyzed and reported in the 105 day report. For each batch of sample preparations (fusion or acidification), a process blank was also analyzed. The fused samples and drainable liquids were analyzed for total alpha activity. All of the fusion samples were obtained from the potassium hydroxide (KOH) fusion preparation (procedure PNL-ALO-115).

Total alpha analyses were performed according to procedures PNL-ALO-420/421, and results are presented in Table 5. In this method, small aliquots of highly diluted samples are dried on counting disks and counted using Ludlum ZnS scintillation counters. Although the post fusion spike performed on one sample from this set had acceptable recovery at 85%, the plates prepared by this method appeared to have a glassy look suggesting the potential for significant alpha mass absorption. The mass loading on the counting plates due to the core material was very low (typically < 0.1 mg); however, solids loading from the KOH fusion preparation flux may result in an alpha absorption effect. Consequently, all of the samples were reanalyzed with a spike added to a duplicate aliquot for each sample. The results showed that the mass absorption effects were small with an average matrix spike recovery of 108%. The uncertainties on the matrix spikes were high because the added activity of the spike was not high enough to produce more reliable counting statistics. Nevertheless, the consistency between recoveries as well as the repeatability of the replicate runs indicate that the alpha mass absorption is not significant. Total alpha results were thus averaged between the two runs.

All of the total alpha results for both cores yielded about the same level of activity. The highest result returned was $0.195 \mu\text{Ci/g}$, which is far below the limit of $41 \mu\text{Ci/g}$. No alpha activity was detected in the drainable liquid.

The RPD values for sample duplicates show excellent agreement, the largest value being only 8.6%. All of the process blanks and lab blanks indicate no detectable alpha activity. Low-level activity was detected in the field blank; however, the activity is well below that of the samples (<0.1% contribution).

TABLE 5. Total Alpha Analysis Results for Tank BX-112

ALO #	DESCRIPTION	Prep	ANALYSIS BATCH	Total Alpha uCi/g	+/-% Error	Mean	95% upper CL
96-2605	PROCESS BLANK		1	<2.E-3			
96-2605	C118 Seg 1AA	Fusion	1	1.52E-01	14%	0.154	0.186
96-2605	C118 Seg 1AA Dup RPD	Fusion	1	1.56E-01 2.6%	15%		
96-2607	C118 Seg 2A	Fusion	1	1.65E-01	8%	0.167	0.167
96-2607	C118 Seg 2A Dup RPD	Fusion	1	1.69E-01 2.4%	8%		
96-2609	C118 Seg 3A	Fusion	1	1.79E-01	15%	0.187	0.408
96-2609	C118 Seg 3A Dup RPD	Fusion	1	1.95E-01 8.6%	8%		
	LAB BLANK		1	<2.E-3			
	LAB STANDARD		1	114%			
	MATRIX SPIKE		1	85%			
96-2611	PROCESS BLANK		2	<2.E-3			
96-2611	C119 Seg 1A	Fusion	2	1.92E-01	7%	0.188	0.188
96-2611	C118 Seg 1A Dup RPD	Fusion	2	1.84E-01 4.3%	7%		
96-2613	C119 Seg 2A	Fusion	2	1.89E-01	8%	0.189	0.189
96-2613	C119 Seg 2A Dup RPD	Fusion	2	1.89E-01 0.0%	8%		
96-2615	C119 Seg 3A	Fusion	2	1.61E-01	8%	0.168	0.168
96-2615	C119 Seg 3A Dup RPD	Fusion	2	1.75E-01 8.3%	8%		
	LAB BLANK		2	<2.E-3			
	LAB STANDARD		2	110%			
	AV.MATRIX SPIKE		2	108%			
96-2619	FIELD BLANK	Direct	1	5.00E-5	38%		
96-2848	PROCESS BLANK		3	<5.E-6			
96-2848	C118 Seg 1A DL	Direct	3	<2.E-3			
96-2850	C118 Seg 3 DL	Direct	3	<2.E-3			
96-2850	C118 Seg 3 DL Dup	Direct	3	<2.E-3			
	LAB STANDARD		3	100%			
	AV.MATRIX SPIKE		3	102%			

INORGANIC RESULTS

Preliminary IC and ICP results are presented in Table 6. These analyses were requested to determine whether intrusion of hydrostatic head fluid (with LiBr added as a tracer) in the sample occurred during sampling operations. The data set presented in Table 6 includes the 45-day fusion preparations and the drainable liquids. The balance of this data set will be reported in the final data report, and are provided for information purposes only. The preliminary results indicate HHF intrusion for Core 118, segment 1A, and perhaps segment 3 as well. Solids samples were prepared via fusion per procedure PNL-ALO-115. The ICP and IC analyses were conducted according to procedure PNL-ALO-211 and PNL-ALO-212, respectively.

Table 6. Preliminary Lithium and Bromide Results from Tank BX-112

PNNL ACL Number	Sample ID	Lithium, $\mu\text{g/g}$	Bromide, $\mu\text{g/mL}$
96-02605	Core 118, Seg 1AA	202	--
96-02607	Core 118 Seg 2A	\leq EQL *	--
96-02609	Core 118 Seg 3A	\leq EQL	--
96-02611	Core 119 Seg 1A	\leq EQL	--
96-02613	Core 119 Seg 2A	\leq EQL	--
96-02615	Core 119 Seg 3A	\leq EQL	--
96-02848	Core 118 Seg 1A DL	337, $\mu\text{g/mL}$	3800
96-02850	Core 118 Seg 3A DL	31, $\mu\text{g/mL}$	300
96-02619	BX-112 Field Blank	--	1.2
96-02620	BX-112 Liner Liquid	--	20,100

* EQL = Estimated Quantitation Limit

Project Coordinators: John M. Conner (WHC)
Kurt L. Silvers (PNNL)

REFERENCES

- [1] J. M. Conner, *Tank 241-BX-112 Push Mode Core Sampling and Analysis Plan*, WHC-SD-WM-TSAP-063, Rev. 2, Westinghouse Hanford Company, Richland, Washington, January 22, 1996.
- [2] J. M. Conner, *45-Day Safety Screening Results for Tank 241-BX-112, Auger Samples 95-AUG-047 and 95-AUG-048*, WHC-SD-WM-DP-157, Rev. 1, Westinghouse Hanford Company, Richland, Washington, December 7, 1995.
- [3] G. T. Dukelow, et al., *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington, August 31, 1995.

DISTRIBUTION SHEET

To Distribution	From Data Assessment and Interpretation	Page 1 of 1		
		Date: 02/13/96		
Project Title/Work Order WHC-SD-WM-DP-170, REV. 0 "45-Day Safety Screening Results for Tank 241-BX-112, Push Mode Cores 118 and 119."		EDT NO.: 614779		
		ECN NO.: N/A		
Name	MSIN	Text With all Attach	EDT/ECN ONLY	
<u>Pacific Northwest Laboratory</u>				
J. R. Gormsen	K7-28		X	
S. J. Harris	K7-22	X		
K. L. Silvers	P7-27		X	
<u>U.S. Department of Energy, RL</u>				
C. A. Babel	S7-54	X		
<u>Westinghouse Hanford Company</u>				
J. N. Appel	G3-21		X	
H. Babad	S7-30	X		
J. M. Conner	R2-12	X		
S. D. Estey	R2-11	X		
G. D. Forehand	S7-31		X	
V. W. Hall	T6-03	X		
D. C. Hetzer	S6-31		X	
J. E. Hyatt	S3-31	X		
L. Jensen	R2-12	X		
N. W. Kirch	R2-11	X		
M. J. Kupfer	H5-49	X		
J. E. Meacham	S7-15	X		
K. L. Powell	T6-04		X	
L. W. Shelton	H5-49	X		
B. C. Simpson	R2-12		X	
M. J. Sutey	T4-07	X		
J. A. Voogd	H5-03		X	
L. R. Webb	T6-06		X	
Central Files	A3-88	2		
EDMC	H6-08	X		
LTIC	T6-03		X	
TCRC	R2-12	X		
TFIC (Tank Farm Information Center)	R1-20		X	
<u>Washington State Department of Ecology</u>				
Single-Shell Tank Unit Manager				
A. B. Stone	B5-18	X		
<u>U. S. Department of Energy</u>				
Jim Poppiti				X
12800 Middlebrook Rd.				
Trevion II, EM-36				
Germantown, MD 20874				
<u>Los Alamos Technical Associates</u>				
T. T. Tran	B1-44	X		